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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,058	02/11/2004	Wen-Hua Ju	503023-A-01-US (Ju)	2122

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EXAMINER	
PEREZ, JULIO R	

ART UNIT	PAPER NUMBER
2617	

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/776,058	Applicant(s) JU ET AL.	
	Examiner Julio R. Perez	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date .
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2617.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 13-16, are rejected under 35 U.S.C. 102(e) as being anticipated Durgin, Patent Publication Number 2005/0124354.

Regarding claim 1, Durgin discloses an apparatus comprising: a first signal monitor for measuring: the signal strength at said first signal monitor of a first packet transmitted by an emitter (paragraphs 0016-00120; 0046-0049, 0052-0053, signal strengths measurements can be made via the base stations in conjunction with the MSC as received from mobile stations); and (ii) the signal strength at said first signal monitor of a second packet transmitted by a wireless terminal (paragraphs 0016-0020; 0046-0049, 0052-0053; 0064); and a processor for: (a) receiving the location of said emitter (paragraphs 0052, 0068-0069); and (b) determining the location of said wireless terminal based on (i), (ii), and the location of said emitter (0016-00120; 0046-0049, 0052-0053; 0068-0069).

Regarding claim 2, Durgin discloses comprising said emitter for transmitting over a wireless medium said first packet wherein said first packet comprises information related to the location of said emitter (0017-0020; 0046-0047; 0052-0053).

Regarding claim 3, Durgin discloses comprising a second signal monitor for measuring: the signal strength at said second signal monitor of said first packet transmitted by said emitter (0017-0020; 0046-0047; 0052-0053); and the signal strength at said second signal monitor of said second packet transmitted by said wireless terminal (0016-00120; 0046-0049, 0052-0053; 0068-0069).

Regarding claim 13, Durgin discloses wherein said emitter is stationary (paragraphs 0016-00120; 0046-0049, 0052-0053, i.e., base stations).

Regarding claim 14, Durgin discloses wherein said information related to the location of said emitter indicates the medium access control address of said emitter (paragraph 0043).

Regarding claim 15, Durgin discloses wherein said information related to the location of said emitter indicates the coordinates of said emitter (paragraph 0119).

Regarding claim 16, Durgin discloses an apparatus comprising: an emitter for transmitting a signal and an identifier (Figures 2-4, paragraphs 0016-00120; 0046-0049, 0052-0053); a first signal monitor for making: (i) a first plurality of signal strength measurements of said signal, wherein said first plurality is associated with a plurality of signal sources that comprise said emitter (paragraphs 0016-0020; 0046-0049, 0052-0053; 0064); and (ii) a measurement of at least one packet from a wireless terminal (paragraphs 0016-0020; 0046-0049, 0052-0053; 0064); and a second signal monitor for

making a second plurality of signal measurements, wherein said second plurality is associated with a plurality of signal sources that comprise said emitter (paragraphs 0016-0020; 0046-0049, 0052-0053; 0064); wherein said first plurality of signal strength measurements, said second plurality of signal strength measurements, said identifier, and said measurement of said at least one packet are used to determine the location of said wireless terminal (paragraphs 0016-00120; 0046-0049, 0052-0053; 0068-0069).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4-12, 17-30, are rejected under 35 U.S.C. 103(a) as being unpatentable over Durgin in view of Admitted Prior Art.

Regarding claim 4, Durgin discloses wherein said processor is also for: acquiring (i) a first plurality of signal strength measurements made by said first signal monitor and (ii) a second plurality of signal strength measurements made by said second signal monitor, wherein said first plurality and said second plurality each are associated with a plurality of signal sources that comprise said emitter (0016-00120; 0046-0049, 0052-0053; 0068-0069).

What Durgin does not specifically disclose is interpolating said first plurality across two dimensions to form a first scalar array of signal samples and said second

plurality across two dimensions to form a second scalar array of signal samples; and generating a vector array of synthetic signal strength vectors based on said first scalar array of signal samples and said second scalar array of signal samples.

However, applicant admits the obtained signal strength measurements are smoothed, in well-known fashion, each signal monitor's plurality of signal strength measurements received from one or more of signal monitors. An example of smoothing algorithm uses a generalized additive model (GAM). The location estimation server then generates a synthetic model by first dividing the wireless network area being modeled into grid squares of known size. Wherein at task 705 location estimation server interpolates over two dimensions, foe each signal monitor independently, each plurality of signal strength measurements, already smoothed in some embodiments, to estimate the received signal strength at the center of each grid square. Akima splines interpolation is a local, which is used by Akima splines. The resultant synthetic model for each signal monitor is a scalar array of signal strengths with an estimated signal strength that corresponds to each grid square (paragraphs 0059-0061 of specification).

Durgin and Admitted Prior Art are combinable because they are from the same field of endeavor, which is, determining the position of a wireless device. At the time of the invention was made, it would have been obvious to one of ordinary skill in the art to modify the signal strength modeler of Durgin smoothing the obtained signal strength measurements and interpolating said first plurality across two dimensions to form a first scalar array of signal samples and said second plurality across two dimensions to form a second scalar array of signal samples; and generating a vector array of synthetic

signal strength vectors based on said first scalar array of signal samples and said second scalar array of signal samples as taught by the applicant's admitted art for the purpose of modeling the signal strength measurements.

Regarding claims 5, 18, the combination of Durgin and Admitted Prior Art discloses the processor is also for matching a presented signal strength vector to at least one of said synthetic signal strength vectors (Durgin, paragraph 0017, 0050-0066, 0068, 0070, 0124).

Regarding claim 6, the combination of Durgin and Admitted Prior Art discloses matching said presented signal strength vector comprises finding the closest match in signal vector space (Durgin, paragraph 0017, 0050-0066, 0068, 0070, 0124).

Regarding claims 7, 20, What Durgin does not specifically disclose is interpolating said first plurality is performed using Akima splines.

However, applicant admits the obtained signal strength measurements are smoothed, in well-known fashion, each signal monitor's plurality of signal strength measurements received from one or more of signal monitors. An example of smoothing algorithm uses a generalized additive model (GAM). The location estimation server then generates a synthetic model by first dividing the wireless network area being modeled into grid squares of known size. Wherein at task 705 location estimation server interpolates over two dimensions, foe each signal monitor independently, each plurality of signal strength measurements, already smoothed in some embodiments, to estimate the received signal strength at the center of each grid square. Akima splines interpolation is a local, which is used by Akima splines. The resultant synthetic model

for each signal monitor is a scalar array of signal strengths with an estimated signal strength that corresponds to each grid square (paragraphs 0059-0061 of specification).

Durgin and Admitted Prior Art are combinable because they are from the same field of endeavor, which is, determining the position of a wireless device. At the time of the invention was made, it would have been obvious to one of ordinary skill in the art to modify the signal strength modeler of Durgin smoothing the obtained signal strength measurements and interpolating said first plurality across two dimensions to form a first scalar array of signal samples and said second plurality across two dimensions to form a second scalar array of signal samples; and generating a vector array of synthetic signal strength vectors based on said first scalar array of signal samples and said second scalar array of signal samples as taught by the applicant's admitted art for the purpose of modeling the signal strength measurements.

Regarding claim 8, the combination of Durgin and Admitted Prior Art discloses said processor is also for smoothing said first plurality (Durgin, paragraph 0017, 0050-0066, 0068, 0070, 0124).

Regarding claims 9, 19, What Durgin does not specifically disclose is wherein smoothing is based on a generalized additive model.

However, applicant admits the obtained signal strength measurements are smoothed, in well-known fashion, each signal monitor's plurality of signal strength measurements received from one or more of signal monitors. An example of smoothing algorithm uses a generalized additive model (GAM). The location estimation server then generates a synthetic model by first dividing the wireless network area being modeled

into grid squares of known size. Wherein at task 705 location estimation server interpolates over two dimensions, foe each signal monitor independently, each plurality of signal strength measurements, already smoothed in some embodiments, to estimate the received signal strength at the center of each grid square. Akima splines interpolation is a local, which is used by Akima splines. The resultant synthetic model for each signal monitor is a scalar array of signal strengths with an estimated signal strength that corresponds to each grid square (paragraphs 0059-0061 of specification).

Durgin and Admitted Prior Art are combinable because they are from the same field of endeavor, which is, determining the position of a wireless device. At the time of the invention was made, it would have been obvious to one of ordinary skill in the art to modify the signal strength modeler of Durgin smoothing the obtained signal strength measurements and interpolating said first plurality across two dimensions to form a first scalar array of signal samples and said second plurality across two dimensions to form a second scalar array of signal samples; and generating a vector array of synthetic signal strength vectors based on said first scalar array of signal samples and said second scalar array of signal samples as taught by the applicant's admitted art for the purpose of modeling the signal strength measurements.

Regarding claims 10, 21, Durgin discloses wherein said processor is also for assigning a signal value in place of a missing signal strength measurement (paragraphs 00107, 0117-0125).

Regarding claims 11, 22, Durgin discloses wherein said signal value is less than or equal to -92 dBm (paragraphs 00107, 0117-0125).

Regarding claims 12, 23, Durgin discloses wherein the signal strength measurement that represents a signal source is one of the median of and the mean of more than one signal strength measurement made over time of said signal source (paragraphs 00107, 0117-0125).

Regarding claim 17, Durgin discloses the claimed invention of claim 16, except the apparatus comprising a location estimation server for: smoothing (i) said first plurality to form a first set of smoothed measurements and (ii) said second plurality to form a second set of smoothed measurements; interpolating (i) said first set of smoothed measurements across two dimensions to form a first scalar array of signal samples and (ii) said second set of smoothed measurements across two dimensions to form a second scalar array of signal samples; and generating a vector array of synthetic signal strength vectors based on said first scalar array of signal samples and said second scalar array of signal samples.

However, applicant admits the obtained signal strength measurements are smoothed, in well-known fashion, each signal monitor's plurality of signal strength measurements received from one or more of signal monitors. An example of smoothing algorithm uses a generalized additive model (GAM). The location estimation server then generates a synthetic model by first dividing the wireless network area being modeled into grid squares of known size. Wherein at task 705 location estimation server interpolates over two dimensions, foe each signal monitor independently, each plurality of signal strength measurements, already smoothed in some embodiments, to estimate the received signal strength at the center of each grid square. Akima splines

interpolation is a local, which is used by Akima splines. The resultant synthetic model for each signal monitor is a scalar array of signal strengths with an estimated signal strength that corresponds to each grid square (paragraphs 0059-0061 of specification).

Durgin and Admitted Prior Art are combinable because they are from the same field of endeavor, which is, determining the position of a wireless device. At the time of the invention was made, it would have been obvious to one of ordinary skill in the art to modify the signal strength modeler of Durgin smoothing said first set of smoothed measurements and interpolating said first set of smoothed measurements across two dimensions to form a first scalar array of signal samples and said second plurality across two dimensions to form a second scalar array of signal samples; and generating a vector array of synthetic signal strength vectors based on said first scalar array of signal samples and said second scalar array of signal samples as taught by the applicant's admitted art for the purpose of modeling the signal strength measurements.

Regarding claim 24, Durgin discloses wherein an access point is collocated with said first signal monitor (Durgin, paragraph 0017, 0050-0066, 0068, 0070, 0124).

Regarding claim 25, Durgin discloses wherein said emitter is stationary (paragraphs 0016-00120; 0046-0049, 0052-0053, i.e., base stations).

Regarding claim 26, Durgin discloses wherein said identifier indicates the medium access control address of said emitter (paragraph 0043).

Regarding claim 27, Durgin discloses wherein said identifier indicates the location of said emitter (paragraph 0119).

Regarding claim 28, Durgin discloses an apparatus comprising: a network interface for acquiring a first plurality of signal strength measurements that are received by a first signal monitor, wherein said first plurality represents a plurality of signal sources (paragraphs 0016-00120; 0046-0049, 0052-0053); and a processor for: smoothing said first plurality to form a first set (paragraphs 0016-00120; 0046-0049, 0052-0053).

Durgin does not specifically disclose interpolating said first set to form a first scalar array of signal samples across two dimensions; and generating a vector array of synthetic signal strength vectors based on said first scalar array of signal samples and a second scalar array of signal samples.

However, applicant admits the obtained signal strength measurements are smoothed, in well-known fashion, each signal monitor's plurality of signal strength measurements received from one or more of signal monitors. An example of smoothing algorithm uses a generalized additive model (GAM). The location estimation server then generates a synthetic model by first dividing the wireless network area being modeled into grid squares of known size. Wherein at task 705 location estimation server interpolates over two dimensions, foe each signal monitor independently, each plurality of signal strength measurements, already smoothed in some embodiments, to estimate the received signal strength at the center of each grid square. Akima splines interpolation is a local, which is used by Akima splines. The resultant synthetic model for each signal monitor is a scalar array of signal strengths with an estimated signal strength that corresponds to each grid square (paragraphs 0059-0061 of specification).

Durgin and Admitted Prior Art are combinable because they are from the same field of endeavor, which is, determining the position of a wireless device. At the time of the invention was made, it would have been obvious to one of ordinary skill in the art to modify the signal strength modeler of Durgin smoothing the obtained signal strength measurements and interpolating said first plurality across two dimensions to form a first scalar array of signal samples and said second plurality across two dimensions to form a second scalar array of signal samples; and generating a vector array of synthetic signal strength vectors based on said first scalar array of signal samples and said second scalar array of signal samples as taught by the applicant's admitted art for the purpose of modeling the signal strength measurements.

Regarding claim 29, Durgin discloses further comprising: a first emitter for transmitting a first signal and a first identifier (paragraphs 0016-00120; 0046-0049, 0052-0053); said first signal monitor for making: said first plurality of signal strength measurements of said first signal, wherein said first plurality is associated with a plurality of signal sources that comprise said first emitter (paragraphs 0016-0020; 0046-0049, 0052-0053; 0064); and (ii) a measurement of at least one packet from a wireless terminal; and a second signal monitor for making a second plurality of signal strength measurements, wherein said second plurality is associated with a plurality of signal sources that comprise said first emitter (0016-00120; 0046-0049, 0052-0053; 0068-0069); wherein said first plurality of signal strength measurements, said second plurality of signal strength measurements, said first identifier, and said measurement of said at

least one packet are used to determine the location of said wireless terminal (0016-00120; 0046-0049, 0052-0053; 0068-0069).

Regarding claim 30, Durgin discloses further comprising a second emitter for transmitting a second signal and a second identifier, wherein said second signal and said second identifier are used to determine the location of said wireless terminal (0016-00120; 0046-0049, 0052-0053; 0068-0069).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julio R. Perez whose telephone number is (571) 272-7846. The examiner can normally be reached on 10:30 - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph H. Feild can be reached on (571) 272- 4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Julio R Perez
Examiner
Art Unit 2617

6/26/06

JOSEPH FEILD
SUPERVISORY PATENT EXAMINER